

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF MISSOURI
EASTERN DIVISION**

NIDEC MOTOR CORPORATION

Plaintiff,

v.

**BROAD OCEAN MOTOR LLC,
BROAD OCEAN TECHNOLOGIES,
LLC, and
ZHONGSHAN BROAD OCEAN
MOTOR CO., LTD.**

Defendants.

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CASE NO. : _____

JURY TRIAL DEMANDED

ORIGINAL COMPLAINT

Plaintiff Nidec Motor Corporation (“Nidec Motor”), through its attorneys, files this complaint against Defendants, Broad Ocean Motor LLC, Broad Ocean Technologies, LLC, and Zhongshan Broad Ocean Motor Co., Ltd. (collectively, “Broad Ocean”) and hereby alleges as follows:

PARTIES

1. Plaintiff Nidec Motor is a corporation organized and existing under the laws of the state of Delaware, with a principal place of business in this judicial district at 8050 W. Florissant Avenue, St. Louis, Missouri 63136.
2. Upon information and belief, Defendant, Broad Ocean Motor LLC is a corporation organized and existing under the laws of the state of Delaware, with an office at 201 E 5th Street, Washington, Missouri 63090.
3. Upon information and belief, Defendant, Broad Ocean Technologies, LLC is a corporation organized and existing under the laws of the state of Michigan, with a principal place

of business at 29615 Hudson Drive, Novi, Michigan 48377. Broad Ocean Technologies, LLC is registered to do business in the State of Missouri.

4. Upon information and belief, Defendant, Zhongshan Broad Ocean Motor Co., Ltd. is a corporation organized and existing under the laws of China, with a principal place of business at No. 3 Shalang Industrial Zone, West District, Zhongshan, 528411, China.

JURISDICTION AND VENUE

5. This is an action for infringement of United States patents, and arises under the patent laws of the United States, 35 U.S.C. § 271, *et. seq.* This Court has exclusive subject matter jurisdiction of such action under 28 U.S.C. §§ 1331 and 1338(a).

6. This Court has personal jurisdiction over Defendants by virtue of Defendants' regular commercial and business activities within and/or directed to the State of Missouri.

7. This Court has general jurisdiction over Defendants because Defendants have continuous and systematic contacts with this forum through their making, using, selling, offering to sell, and/or importing blower motors for an HVAC system in or into the State of Missouri. In addition, this Court has specific jurisdiction over Defendants because Defendants purposefully directed their activities at residents of this forum and this patent infringement action arises out of or relates to their making, using, selling, offering to sell, and/or importing blower motors for an HVAC system in or into the State of Missouri.

8. Defendant, Broad Ocean Motor LLC is doing business in Missouri, has purposefully availed itself of the privilege of conducting business with residents of Missouri, *inter alia*, by having an office in this judicial district, and as such, has established sufficient minimum contacts with the State of Missouri.

9. Defendant, Broad Ocean Technologies, LLC is doing business in Missouri, has purposefully availed itself of the privilege of conducting business with residents of Missouri, *inter alia*, by registering with the State of Missouri to do business in Missouri, and as such, has established sufficient minimum contacts with the State of Missouri.

10. Defendant, Zhongshan Broad Ocean Motor Co., Ltd. is doing business in Missouri, has purposefully availed itself of the privilege of conducting business with residents of Missouri, *inter alia*, by supplying, distributing, selling, using, making, offering to sell, and/or importing blower motors for an HVAC system in or into the State of Missouri, and as such, has established sufficient minimum contacts with the State of Missouri.

11. Venue is proper before this Court pursuant to 28 U.S.C. § 1391(b) and (c) and 28 U.S.C. § 1400(b).

**COUNT I:
INFRINGEMENT OF U.S. PATENT NO. 7,208,895**

12. On April 24, 2007, United States Patent No. 7,208,895 (“the ‘895 patent”) was duly and legally issued for “Control Systems and Methods for Permanent Magnet Rotating Machines.” A true and correct copy of the ‘895 patent is attached hereto as Exhibit A and made a part hereof.

13. Nidec Motor is the assignee and owner of all rights and title to the ‘895 patent, with the right to enforce the patent against infringers and to sue for and collect damages for all relevant times, including the right to assert the present cause of action.

14. Defendants manufacture, make, have made, use, practice, import, provide, supply, distribute, sell and/or offer for sale products in or into the United States, including but not limited to blower motors for HVAC systems, that infringe one or more claims of the ‘895 patent in violation of one or more subsections of 35 U.S.C. § 271.

15. Defendants' products that infringe the '895 patent include but are not limited to "1HP 115~120V Unit" BO Part Number ZWK702E0750501 ("the HP Broad Ocean Motor").

16. As one example of Defendants' infringement of the '895 Patent, the HP Broad Ocean Motor infringes at least claims 9 and 21 of the '895 Patent. Details of this infringement are set forth below:

17. Claim 9 recites "[a] permanent magnet rotating machine and controller assembly configured to perform the method of claim 1." The HP Broad Ocean Motor includes a motor controller that controls a permanent magnet rotating machine that performs the method of claim 1.

18. As recited in claim 1, the permanent magnet rotating machine of the HP Broad Ocean Motor includes "a stator and a rotor situated to rotate relative to the stator, the stator having a plurality of energizable phase windings situated therein." A photograph of the HP Broad Ocean Motor having a permanent magnet rotating machine having the recited elements of claim 1 is provided below:



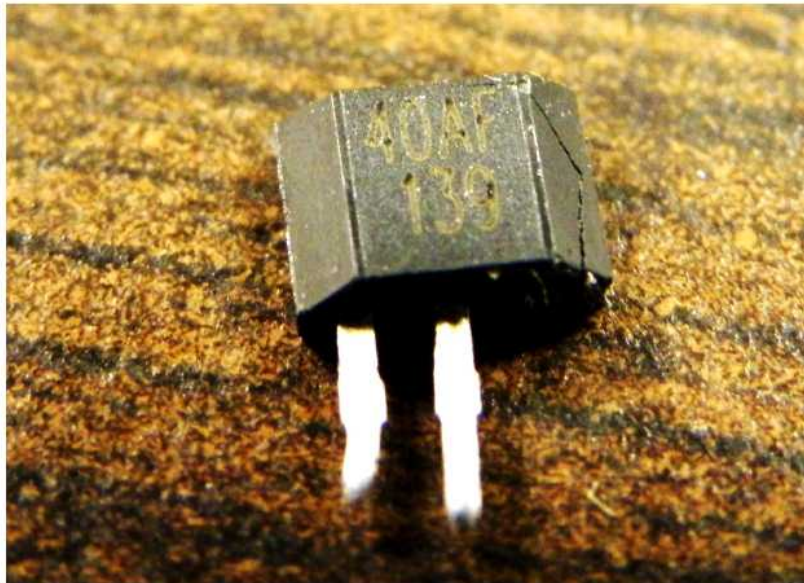
19. As further recited in claim 1 of the '895 Patent, the HP Broad Ocean Motor is configured for "receiving a rotor torque demand." As shown in the table below, the HP Broad Ocean Motor exhibits substantially constant rotor torque (between 24.4 lb-in and 25.0 lb-in) over a range of rotor speeds (between 600 RPMs to around 1200 RPMs). Upon information and belief, the motor controller for such product must rely on a rotor torque demand to achieve such calibration of torque output over a range of speeds.

Time	<u>Torque Demand</u>		<u>Magtrol Dyn</u>		<u>Power Meter Data</u>								Shaft Power
	unmo-scaled	lb-in	Speed	Torque	Vac	Iac	Pac	Fac	Vm	Im	Pm	Fm	
			(rpm)	(lb-in)	(Vrms)	(Irms)	(W)	(Hz)	(Vrms)	(Irms)	(W)	(Hz)	(W)
8:51:32 AM			0.0	0.0	238.2	0.17	0.8	60.0	0.0	0	0.0	0.0	0
8:52:16 AM			299.3	33.2	238.0	1.70	234.4	60.0	63.0	2.77	234.4	0.0	117
8:53:38 AM			400.0	34.8	237.7	2.12	296.5	60.0	78.3	2.78	266.7	33.1	164
8:55:40 AM			500.0	36.3	237.8	2.58	364.3	60.0	94.7	2.88	326.5	41.9	215
8:56:43 AM			600.0	24.4	237.9	1.74	239.9	60.0	97.0	1.8	220.5	49.6	173
8:58:10 AM			700.0	24.8	237.8	1.96	272.3	60.0	111.7	1.78	252.2	58.8	205
8:58:56 AM			799.8	25.0	237.8	2.24	313.3	60.0	123.7	1.79	291.0	66.7	237
8:59:37 AM			900.5	24.8	237.7	2.44	341.2	60.0	134.8	1.75	321.0	74.5	265
9:00:10 AM			999.8	24.8	237.7	2.68	377.9	60.0	143.0	1.77	354.0	84.5	293
9:00:45 AM			1099.5	24.8	237.6	2.81	397.9	60.0	152.2	1.73	377.9	90.7	322
9:01:19 AM			1200.3	24.4	237.7	2.96	419.6	60.0	158.9	1.7	393.5	101.2	346
													0
	Broad												0
	Ocean												0
	1/2HP												0

20. As still further recited in claim 1 of the '895 Patent, the HP Broad Ocean Motor is configured for "calculating a scaled torque demand from the received torque demand as a function of a speed of the machine to obtain a substantially constant rotor torque over a range of rotor speeds." As stated in paragraph 19, the HP Broad Ocean Motor exhibits substantially constant rotor torque (between 24.4 lb-in and 25.0 lb-in) over a range of rotor speeds (between 600 RPMs to around 1200 RPMs). Upon information and belief, the motor controller of the HP Broad Ocean Motor must scale the torque demand to produce such constant rotor torque from an input rotor torque demand.

21. Furthermore, the HP Broad Ocean Motor includes a speed sensor. Upon information and belief, the HP Broad Ocean Motor uses the speed of the motor as sensed by the speed sensor as the feedback element to control how the torque demand is scaled in order to achieve the result of

a substantially constant rotor torque over a range of rotor speeds. A photograph of the HP Broad Ocean Motor having a speed sensor (xHall Device “40AF139”) is provided below:



22. Claim 21 recites “[a] permanent magnet rotating machine and controller assembly configured to perform the method of claim 12.” The HP Broad Ocean Motor includes a motor controller that controls a permanent magnet rotating machine that performs the method of claim 12.

23. As recited in claim 12, the permanent magnet rotating machine of the HP Broad Ocean Motor includes “a stator and a rotor situated to rotate relative to the stator, the stator having a plurality of energizable phase windings situated therein.”

24. Upon information and belief, the HP Broad Ocean Motor is configured for “calculating an IQr demand from a speed or torque demand,” as recited in claim 12.

25. Upon information and belief, the HP Broad Ocean Motor is configured for “calculating a dr-axis injection current demand as a function of a speed of the rotor,” as recited in claim 12.

26. Upon information and belief, the HP Broad Ocean Motor is configured for “combining the IQr demand and the dr-axis injection current demand to produce an IQdr demand that is compensated for any torque contribution of dr-axis-current,” as recited in claim 12.

27. The HP Broad Ocean Motor, when used by Broad Ocean’s customers as part of HVAC systems and as intended and instructed by Defendants, infringes at least claims 9 and 21 of the ‘895 Patent. Upon information and belief, the HP Broad Ocean Motor is specifically designed and specifically marketed by Defendants as a blower motor for use in an HVAC system.

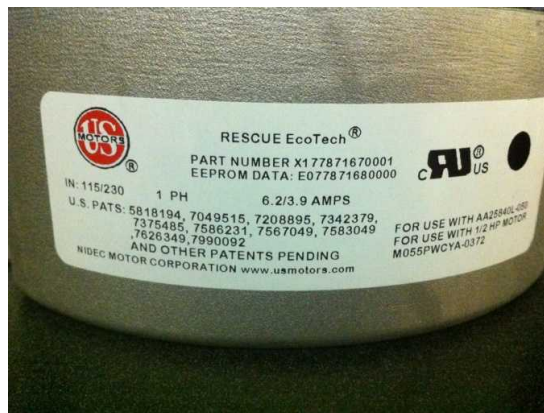
28. Upon information and belief, Defendants offer to sell or sell within the United States or import into the United States blower motors, which constitute an apparatus for use in practicing the claimed methods of the ‘895 Patent. The motor controller and/or permanent magnet rotating machine of the HP Broad Ocean Motor constitutes a material component of the claimed invention of the ‘895 Patent.

29. Upon information and belief, Defendants knew that the HP Broad Ocean Motor is especially made or especially adapted for use in an infringement of the ‘895 patent. Upon information and belief, the motor controller and/or permanent magnet rotating machine of the HP Broad Ocean Motor is specifically designed and specifically marketed for use in practicing claims 9 and 21 of the ‘895 Patent.

30. Upon information and belief, the motor controller and/or permanent magnet rotating machine of the HP Broad Ocean Motor is not a staple article or commodity of commerce suitable for substantial noninfringing use. There is no substantial non-infringing use of the motor controller and permanent magnet rotating machine of the HP Broad Ocean Motor because, upon information and belief, they are specifically designed and marketed as a component of a blower motor for use in an HVAC system.

31. Defendants and/or individuals within Defendants' employ had knowledge of the '895 patent by virtue of Nidec Motor's marking of the '895 Patent in its products, or at the latest, by virtue of cease and desist letters (attached hereto as Exhibit B) mailed to each of Defendants respectively on September 20 and 23, 2013 which serve as notice to Defendants of the '895 Patent and of their infringing conduct.

32. At all relevant times, Nidec Motor has complied with any and all marking and/or notice provisions of 35 U.S.C. § 287 with respect to the '895 patent. Among other things, Nidec Motor has marked products utilizing the subject matter of the '895 Patent with the number of the '895 Patent. As an example, photographs of Nidec Motor's RESCUE EcoTech® motor bearing the number of the '895 Patent are provided below:



33. Nidec Motor has been damaged as a result of Defendants' infringing conduct. Defendants are, thus, liable to Nidec Motor in an amount that adequately compensates it for Defendants' infringement, which, by law, cannot be less than a reasonable royalty, together with interest and costs, including lost profits, as affixed by this Court under 35 U.S.C. § 284.

34. Defendants will continue their infringement of the '895 patent unless enjoined by the Court. Defendants' infringing conduct has caused Nidec Motor irreparable harm and will continue to cause such harm without the issuance of an injunction.

**COUNT II:
INFRINGEMENT OF U.S. PATENT NO. 7,626,349**

35. On December 1, 2009, United States Patent No. 7,626,349 ("the '349 patent") was duly and legally issued for "Low Noise Heating, Ventilating and/or Air Conditioning (HVAC) Systems." A true and correct copy of the '349 patent is attached hereto as Exhibit C and made a part hereof.

36. Nidec Motor is the assignee and owner of all rights and title to the '349 patent, with the exclusive right to enforce the patent against infringers and to sue for and collect damages for all relevant times, including the right to assert the present cause of action.

37. Defendants manufacture, make, have made, use, practice, import, provide, supply, distribute, sell and/or offer for sale products in or into the United States, including but not limited to blower motors for HVAC systems, that infringe one or more claims of the '349 patent in violation of one or more subsections of 35 U.S.C. § 271.

38. Defendants' products that infringe the '349 patent include but are not limited to the HP Broad Ocean Motor.

39. Upon information and belief, the HP Broad Ocean Motor is specifically designed and is specifically marketed by Defendants as a blower motor for use in an HVAC system.

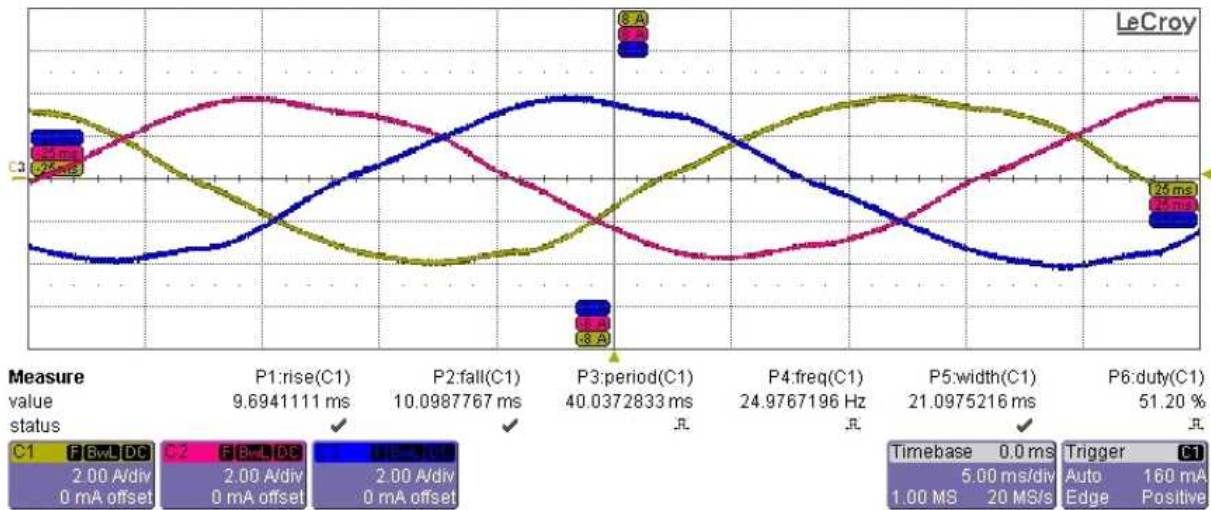
40. Upon information and belief, the HP Broad Ocean Motor is specifically designed and is specifically marketed by Defendants to be used in combination with an HVAC system, which includes "a system controller, a motor controller, an air-moving component, and permanent magnet motor."

41. The HP Broad Ocean Motor includes “a permanent magnet motor having a stationary assembly, a rotatable assembly in magnetic coupling relation to the stationary assembly, and a shaft coupled to the air-moving component.” A photograph of the HP Broad Ocean Motor is provided below:



42. Further, the motor controller of the HP Broad Ocean Motor “is configured for performing sinewave commutation, using independent values of Q and d axis currents, in response to one or more control signals received from the system controller to produce continuous phase currents in the permanent magnet motor for driving the air-moving component.” The signal plots shown below show that the HP Broad Ocean Motor produces continuous phase sine wave currents in the permanent magnet motor that will drive the air-moving component during use at various revolutions per minute (RPMs). Upon information and belief, the operation of the motor controller of the HP Broad Ocean Motor is controlled by the system controller.

Broad Ocean 050 HP Carrier Unit tap 5 300 RPM Current



43. Further proof that the HP Broad Ocean Motor performs sine wave commutation using independent values of Q and d axis currents can be found in a digital signal processor (DSP). A photograph is provided below showing that the HP Broad Ocean Motor uses a digital signal processor labeled with “C2L4DFP,” which, upon information and belief, is a number for a Renesas DSP chip.



44. Upon information and belief, the mode of control for the DSP in the Broad Ocean Motor is to use sine wave commutation driven by independent values of Q and d axis currents to provide a computationally and memory efficient manner for producing continuous sine wave phase currents in the permanent magnet motor as shown by the above signal plots.

45. Upon information and belief, the HP Broad Ocean Motor is specifically designed and is specifically marketed by Defendants as a blower assembly for use in an HVAC system.

46. Upon information and belief, the HP Broad Ocean Motor is specifically designed and is specifically marketed by Defendants to be used in combination with an HVAC system, which include “a motor controller, a blower, and permanent magnet motor.”

47. The HP Broad Ocean Motor includes a permanent magnet motor “having a stationary assembly, a rotatable assembly in magnetic coupling relation to the stationary assembly, and a shaft coupled to the blower.”

48. Upon information and belief, the HP Broad Ocean Motor includes a motor controller that “is configured for performing sinewave commutation, using independent values of Q and d axis currents, in response to one or more control signals received from a system controller to produce continuous phase currents in the permanent magnet motor for driving the blower.” As stated in paragraphs 42, 43, and 44 and incorporated herein by reference, the motor controller of the HP Broad Ocean Motor is specifically designed to drive the blower by “performing sinewave commutation, using independent values of Q and d axis currents, in response to one or more control signals received from a system controller to produce continuous phase currents in the permanent magnet motor.”

49. Upon information and belief, the HP Broad Ocean Motor is specifically designed and specifically marketed by Defendants to perform the “method for driving an air-moving

component of a heating, ventilating and/or air conditioning (HVAC) system in response to a control signal.”

50. The HP Broad Ocean Motor includes a permanent magnet motor “having a stationary assembly and a rotatable assembly in magnetic coupling relation to the stationary assembly, said rotatable assembly coupled in driving relation to the air-moving component.”

51. Upon information and belief, the HP Broad Ocean Motor performs the method of “receiving at least one control signal from a system controller.” As stated in paragraph 42 and as is standard in the industry, the HP Broad Ocean Motor receives a control signal from a system controller of an HVAC system when in use.

52. Upon information and belief, the HP Broad Ocean Motor performs the method of “performing sinewave commutation, using independent values of Q and d axis currents, in response to the at least one control signals received from the system controller to produce continuous currents in the permanent magnet motor for driving said air-moving component.” As stated in paragraphs 42, 43, and 44 and incorporated herein by reference, the motor controller of the HP Broad Ocean Motor is specifically designed to drive the air-moving component by “performing sinewave commutation, using independent values of Q and d axis currents, in response to the at least one control signals received from the system controller to produce continuous currents in the permanent magnet motor.”

53. The HP Broad Ocean Motor, when used by Broad Ocean’s customers as part of HVAC systems and as intended and instructed by Defendants, infringes at least claims 1, 16 and 19 of the ‘349 Patent. Upon information and belief, the HP Broad Ocean Motor is specifically designed and specifically marketed by Defendants as a blower motor for use in an HVAC system

54. Upon information and belief, Defendants offer to sell or sell within the United States or import into the United States blower motors for HVAC systems, which constitute a component of and a material part of the claimed invention of the '349 Patent. The motor controller of the HP Broad Ocean Motor or the HP Broad Ocean Motor itself constitutes a material component of an HVAC system.

55. Defendants knew that the HP Broad Ocean Motor is especially made or especially adapted for use in an infringement of the '349 patent. Upon information and belief, the HP Broad Ocean Motor is specifically designed and marketed for use in combination with HVAC system.

56. The HP Broad Ocean Motor is not a staple article or commodity of commerce suitable for substantial noninfringing use as there is no substantial non-infringing use of the HP Broad Ocean Motor. Upon information and belief, the HP Broad Ocean Motor is specifically designed and marketed to be used with HVAC systems.

57. Defendants and/or individuals within Defendants' employ had knowledge of the '349 patent by virtue of Nidec Motor's marking of the '349 Patent in its products, or at the latest, by virtue of cease and desist letters (attached hereto as Exhibit B) mailed to each of Defendants respectively on September 20 and 23, 2013 which serve as notice to Defendants of the '349 Patent and of their infringing conduct.

58. At all relevant times, Nidec Motor has complied with any and all marking and/or notice provisions of 35 U.S.C. § 287 with respect to the '349 patent. Among other things, Nidec Motor has marked products utilizing the subject matter of the '349 Patent with the number of the '349 Patent. As an example, photographs of Nidec Motor's RESCUE EcoTech® motor bearing the number of the '349 Patent are provided below:



59. Nidec Motor has been damaged as a result of Defendants' infringing conduct. Defendants are, thus, liable to Nidec Motor in an amount that adequately compensates it for Defendants' infringement, which, by law, cannot be less than a reasonable royalty, together with interest and costs, including lost profits, as affixed by this Court under 35 U.S.C. § 284.

60. Defendants will continue their infringement of the '349 patent unless enjoined by the Court. Defendants' infringing conduct has caused Nidec Motor irreparable harm and will continue to cause such harm without the issuance of an injunction.

JURY DEMAND

Nidec Motor hereby requests a trial by jury pursuant to Rule 38 of the Federal Rules of Civil Procedure.

PRAYER FOR RELIEF

THEREFORE, Nidec Motor respectfully requests that this Court enter judgment in its favor and grant Nidec Motor the following relief:

1. Judgment that one or more claims of the '895 Patent have been infringed, either literally and/or under the doctrine of equivalents, in violation of one or more subsections of 35 § U.S.C. 271;
2. Judgment that one or more claims of the '349 Patent have been infringed, either literally and/or under the doctrine of equivalents, in violation of one or more subsections of 35 § U.S.C. 271;
3. An award of damages adequate to compensate Nidec Motor for the infringement that has occurred, but in no event less than a reasonable royalty as permitted by 35 U.S.C. § 284.
3. That Nidec Motor be granted pre-judgment and post-judgment interest on the damages caused to it by reason of Defendants' infringing activities and other conduct complained of herein;
4. That this Court declare this an exceptional case and award Nidec Motor its reasonable attorney's fees and costs in accordance with 35 U.S.C. § 285;
5. That Defendants be enjoined from any further activity or conduct that infringes one or more claims of the '895 Patent and '349 Patent; and
6. That Nidec Motor be granted such other and further relief as the Court may deem just and proper under the circumstances including, but not limited to, supplemental damages and/or and accounting for any infringing acts not covered by any damages verdict entered in this action and for any post-verdict and/or post-injunction infringing acts.

Date: September 25, 2013

Respectfully submitted

By: /s/ Jason M. Schwent

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